Active and Completed Aluminum Portfolio

Active

Title	*OITProgram*	*Direct/ Relevant*	*Status*
1. Primary Reduction			
Aluminum Carbothermic Technology	Aluminum	Direct	Active
Development of a Novel Non-Consumable Anode for Electrowinning Primary Aluminum	Aluminum	Direct	Active
Development of Inert Anode for the Primary Aluminum Industry	Inventions & Innovation	Relevant	Active
Dynamic Inert Metal Anodes for Primary Aluminum Production	Aluminum	Direct	Active
Energy Saving Lightweight Refractory	Inventions & Innovation	Relevant	Active
Inert Metal Anode Life In Low Temperature Aluminum Reduction Process	Aluminum	Direct	Active
Monolithic Refractory Material	Inventions & Innovation	Relevant	Active
Novel Ceramic Composition for Hall-Heroult Cell Anode Application	Inventions & Innovation	Direct	Active
Viable Inert Cathode for Smelting Primary Aluminum	Inventions & Innovation	Relevant	Active
Wettable Ceramic-Based Drained Technology for Aluminum Electrolysis Cells	Aluminum	Direct	Active
Wetted Cathodes for Low-Temperature Aluminum Smelting	Aluminum	Direct	Active
2. Melting and Melt Treatment			
CFCC Immersion Tube	Industrial Materials for the Future	Relevant	Active
Development of an Innovative Energy Efficient High Temperature Natural Gas Fired	Inventions & Innovation	Relevant	Active
Development of an Innovative Vertical Floatation Melter and Scrap Dryer for Use in Aluminum Processing Industry	Aluminum	Direct	Active
Dynamic Expert Control for Oxy Fuel Performance	Glass	Relevant	Active
Energy Conserving Tool for Combustion Dependent Industries	NICE3	Relevant	Active
Energy Efficient Isothermal Melting of Aluminum	Aluminum	Direct	Active

Active

2. Melting and Melt Treatment

Title	OITProgram	Direct/ Relevant	Status
Forced Internal Recirculation Burner	Combustion	Relevant	Active
Gas fluxing of Aluminum: Bubble probe for optimization of bubble distribution and minimization of splashing/droplet formation	Aluminum	Direct	Active
High Efficiency, Low-Dross Combustion System	Aluminum	Direct	Active
Improving Energy Efficiency in Aluminum Melting	Aluminum	Direct	Active
NOx Emission Reduction By Oscillating Combustion	Steel	Relevant	Active
Reduction of Oxidative Melt Loss of Aluminum and Its Alloys	Aluminum	Direct	Active
Rotary Burner Demonstration	Petroleum	Relevant	Active
Selective Adsorption of Salts from Molten Aluminum	Aluminum	Direct	Active

3. Forming

Advanced Lost Foam Casting Technology	Metal Casting	Relevant	Active
Brazing and Spot Welding Innovations for Joining Aluminum Compounds	Inventions & Innovation	Relevant	Active
Calculation Methods for Extruded Aluminum Designs--Integrated Numerical Methods and Design Provisions for Aluminum Structures	Aluminum	Direct	Active
Casting Characteristics of Aluminum Die Casting Alloys	Metal Casting	Relevant	Active
Continuous Severe Plastic Deformation Processing of Aluminum Alloys	Aluminum	Direct	Active
Coolant Characteristics and Control in Direct Chill Casting	Aluminum	Direct	Active
Development of a Rolling Process Design Tool for Use in Improving Hot Roll Slab	Aluminum	Direct	Active
Development of a two-phase model for the hot deformation of highly-alloyed aluminum	Aluminum	Direct	Active
Development of integrated methodology for thermo-mechanical processing of aluminum	Aluminum	Direct	Active
Die Materials for Critical Applications and Increased Production Rates	Metal Casting	Relevant	Active
Effects of Applied Pressure During Feeding on the Fatigue Properties of Cast Aluminum	Metal Casting	Relevant	Active
Energy Efficient Manufacturing of Superior Aluminum Extrusions	Aluminum	Direct	Active
Enhancement of Aluminum Alloy Forging	Supporting Industries	Relevant	Active
Evaluation & Characterization on In-Line Annealed Continuous Cast Aluminum Sheet	Aluminum	Direct	Active

Active

3. Forming

Title	OITProgram	Direct/ Relevant	Status
Fundamental studies of structural factors affecting the formability of continuous cast aluminum alloys	Aluminum	Direct	Active
Gating of Aluminum Permanent Mold Castings	Metal Casting	Relevant	Active
Heat Transfer at the Mold/Metal Interface in Permanent Mold Casting of Aluminum Alloys	Metal Casting	Relevant	Active
Increasing Productivity and Reducing Emissions Through the Enhanced Application Control of Die Casting Die Lubricants	NICE3	Relevant	Active
Innovative Die Material and Lubrication Strategies for Forging Technology	Supporting Industries	Relevant	Active
Integrated Heat Treatment Model for Aluminum Castings	Supporting Industries	Relevant	Active
Materials and Process Design for High Temperature Carburizing	Supporting Industries	Relevant	Active
Modeling and Optimization of Direct Chill Casting to Reduce Ingot Cracking	Aluminum	Direct	Active
Mold Materials for Permanent Molding of Aluminum Alloys	Metal Casting	Relevant	Active
Optimization of the Squeeze Casting Process for Aluminum Alloy Parts	Metal Casting	Relevant	Active
Reduction of Annealing Times for Energy Conservation in Aluminum Processing	Aluminum	Direct	Active
Spray Rolling Aluminum Strip	Aluminum	Direct	Active
Surface behavior of aluminum alloys deformed under various processing conditions	Aluminum	Direct	Active
Textures in Strip-Cast Aluminum Alloys	Aluminum	Direct	Active
Visualization Tools For Die Casting	Metal Casting	Relevant	Active

4. Recycling and Environmental

Aluminum Scrap Sorting Project	Aluminum	Direct	Active
Converting Spent Potliner (SPL) to Useful Glass Fiber Products	Aluminum	Direct	Active
Innovative System Blows Away Sorting Problems for Recyclers	Inventions & Innovation	Relevant	Active
Processing and Recycling of Aluminum Wastes (concrete)	Aluminum	Direct	Active
Recycling of Aluminum Dross/Saltcake	NICE3	Relevant	Active
Reducing Chloride Emissions From Aluminum Production	NICE3	Relevant	Active

Active

Title	OITProgram	Direct/ Relevant	Status
5. Materials and Sensors			
Advanced Intermetallic Alloy Development	Industrial Materials for the Future	Relevant	Active
Centrifugally Cast Nickel Aluminide Transfer Rolls for Steel	Steel	Relevant	Active
Development of a Composite Reinforced Aluminum Conductor	Inventions & Innovation	Relevant	Active
Intelligent Potroom Operation	Aluminum	Direct	Active
Laser Ultrasonics for On-Line Measurement of Tube Wall and Eccentricity	Steel	Relevant	Active
Measurement of Melt Constituents with LIBS	Steel	Relevant	Active
Microsmooth Process on Aluminum Wheels	NICE3	Relevant	Active
Nickel Aluminide Heat Trays and Furnace Fixtures	Industrial Materials for the Future	Relevant	Active
Potlining Additives	Aluminum	Direct	Active
Sensor Fusion for Intelligent Process Control	Sensors & Control	Relevant	Active
Sensors for Die Casting	Metal Casting	Relevant	Active
Thermal Imaging Control of Furnaces and Combusters	Sensors & Control	Relevant	Active
Titanium Matrix Composite Tooling Material For Enhanced Manufacture of Aluminum Die Castings	Inventions & Innovation	Relevant	Active
6. Other			
Demonstration of a High-Temperature, Corrosion Resistant Recuperator for the Metals	NICE3	Relevant	Active
Filtering Molten Metal	Inventions & Innovation	Relevant	Active
Intelligent Extruder	Sensors & Control	Relevant	Active
Nickel Based Superalloy with improved Weldability and Oxidation Resistance	Inventions & Innovation	Relevant	Active
Novel Techniques for Increasing Corrosion Resistance	Inventions & Innovation	Relevant	Active
Rapid Heat Treatment of Cast Aluminum Components	NICE3	Relevant	Active
Reflective Aluminum Chips	Inventions & Innovation	Relevant	Active

Completed

Title	OITProgram	Direct/ Relevant	Status
1. Primary Reduction			
Advanced Anodes and Cathodes Utilized in Energy-Efficient Aluminum Production Cells	Aluminum	Direct	Completed
2. Melting and Melt Treatment			
Detection and Removal of Molten Salts from Molten Aluminum Alloys	Aluminum	Direct	Completed
High Efficiency, High-Capacity, Low-NOx Aluminum Melting Using Oxygen-Enhanced Combustion	Aluminum	Direct	Completed
Improved Grain Refinement Process for Aluminum	Aluminum	Direct	Completed
Prevention of Molten Aluminum-Water Explosions	Aluminum	Direct	Completed
3. Forming			
Aluminum Bridge Decking	NICE3	Relevant	Completed
Semi-Solid Aluminum Alloys - SSM Consortium Partnership with MIT and ORNL	Aluminum	Relevant	Completed
4. Recycling and Environmental			
Aluminum Scrap Decoater	NICE3	Relevant	Completed
Improved System Yields $100,000 Annual Savings	BestPractices	Relevant	Completed
Onsite Process for Recovering Waste Aluminum	NICE3	Relevant	Completed
Recycling Aluminum Salt Cake	Aluminum	Direct	Completed